

## 6. SOURCES OF INFORMATION ABOUT STATIC ELECTRICITY

### 6.1 GENERAL

Internet Websites - search under electrostatic, static electricity, etc. and for companies and organisations (Google is a useful 'search engine').. Many companies and organisations involved with static electricity have their own Websites, and many include links to other relevant sites. (JCI Website: <http://www.jci.co.uk>)

### 6.2 ORGANISATIONS ORGANISING CONFERENCES & MEETINGS:

Electrostatics Group, The Institute of Physics, 76 Portland Place, London, W1N 4AA (Tel: +44 (0)171 470 4800 Fax: +44 (0)171 470 4848 email: [conferences@iop.org](mailto:conferences@iop.org) Website: <http://www.iop.org/IOP/Groups/SE/>). Basic research, atmospheric electricity, biological aspects, measurements, hazards & applications. 2-3 Group meetings a year and an international conference in UK every 4 years: 1971 - 2003. A list of the papers published is included on the JCI Website (<http://www.jci.co.uk/StatCfs.html>). Conference proceedings are published by Institute of Physics (Contact Kathryn Cantley, IoP Publishing, Dirac House, Temple Back, Bristol, BS1 6BE (email: [kathryn.cantley@iopublishing.co.uk](mailto:kathryn.cantley@iopublishing.co.uk)))

A European Conference on Static Electricity is held every 4 years (alternates bi-annually with Institute of Physics Conference). These are held in different countries throughout Europe - in 2001 it was in Koscielisko, Poland. Papers are published in special issues of *Journal of Electrostatics*.

Institution of Electrical Engineers, Savoy Place London, WC2R 0BL (Tel: 0171 240 1871) organises occasional meetings and colloquia.

EOS/ESD Association (7900 Turin Road, Bldg 3, Suite 2, Rome, NY 13440-2069, USA Fax: +1 315 339 6793 email: [eosesd@aol.com](mailto:eosesd@aol.com) website: [www.eosesd.org](http://www.eosesd.org)) - a Symposium each autumn in US - mainly concerned with interaction of static with microelectronics. Conference papers are published.

IEEE-IAS (Institution of Electrical and Electronic Engineers - Industrial Applications Society) - organises a conference in US each year, early October, with a section on electrostatics. Concerned with measurements, hazards and applications. Selected papers are published.

Electrostatics Society of America (ESA). Organises a Conference each summer. Their Website is at: <http://www.electrostatics.org>. The conference this year will be held at University of Little Rock, Arkansas, from 24-27 June 2003.

Meetings of other organisations which may have relevance are: The Dielectrics Society, International Aerospace and Ground Conferences on 'Lightning and Static Electricity'.

### 6.3 INFORMATION ON MEETINGS

A list of meetings likely to be relevant to people interested in electrostatics is kept on the JCI Website at <http://www.jci.co.uk/meet.html>. This includes telephone, Fax and email addresses as well as hyperlinks where these are known. Information on meetings is also held on the Journal of Electrostatics Website (<http://www.ee.rochester.edu/journals/elstat/>).

**6.4 JOURNALS FOR PUBLICATION OF PAPERS:** *Journal of Electrostatics* - published 6

times a year by Elsevier. Editor Prof Tom Jones (University of Rochester, NY email: <http://www.ee.rochester.edu>). The contents of the Journal for the last several years are listed on the Journal Website: <http://www.ee.rochester.edu/journals/elstat/>.

There is an on-line 'ESD Journal' at: <http://www.esdjournal.com/>

A bi-monthly Newsletter 'Threshold' is published for members of the EOS/ESD Association.

Papers on electrostatic topics are published in many scientific journals. These may be accessed via the various abstracting sources available - for example 'Physics Abstracts' (published by IEE).

## **6.5 DIRECTORIES:** Kompass, Kelly's, Dial Industry

## **6.6 STANDARDS:**

### **6.6.1 British Standards Institution :**

389 Chiswick High Road, London W4 4AL. Tel: +44 181 996 7000 Fax: +44 181 996 7001  
email: [standards@bsi.org.uk](mailto:standards@bsi.org.uk) Website: [www.bsi.org.uk/bsi](http://www.bsi.org.uk/bsi)

BS 5958: Part 1: 1991 Code of practice for Control of undesirable static electricity: Part 1. General considerations

BS 5958: Part 2: 1991 Code of practice for Control of undesirable static electricity: Part 2. Recommendations for particular industrial situations

BS 7506: Part 1: 1995 Methods for Measurements in electrostatics Part 1. Guide to basic electrostatics

BS 7506: Part 2: 1996 Methods for Measurements in electrostatics Part 2. Test methods

### **6.6.2 European & International Standards:** (available from BSI and other National Standards Organisations, websites: [www.cenorm.be/](http://www.cenorm.be/) and [www.cenelec.be/](http://www.cenelec.be/))

CENELEC Report R044-001: 1999 Safety of machinery - Guidance and recommendations for the avoidance of hazards due to static electricity

*(Note: this standard is due to be superseded by CLC/TR 50404 Electrostatics - Code of practice for the avoidance of hazards due to static electricity, which is the final stages of development)*

EN 1149-1:1995 Protective clothing - Electrostatic properties Part 1. Surface resistivity (test methods and requirements)

*(Note: this standard is due to be re-issued as an update during 2003)*

EN 1149-2:1997 Protective clothing - Electrostatic properties Part 2. Test method for the measurement of the electrical resistance through a material (vertical resistance)

prEN 1149-3: 2002 Protective clothing – Electrostatic properties Part 3. Test methods for the measurement of charge decay

EN 100015-1:1992 Harmonised system of quality control assessment for electronic components 'Basic specification: Protection of electrostatic sensitive devices Part 1: General requirements'  
*(Note: this standard is now withdrawn and superseded by the EN version of IEC 61340-5-1)*

ISO 6356: 2000 Textile floor coverings - Assessment of static electrical propensity - Walking test

ISO 10965:1998 Textile floor coverings - determination of electrical resistance

### **6.6.3 International Electrotechnical Commission IEC TC101: (IEC Home Page:**

[www.iec.ch](http://www.iec.ch))

IEC TC101 'Dashboard'[Yes, it is all one URL!]: [www.iec.ch/cgi-bin/procgi.pl/www/iecwww.p?wwwlang=E&wwwprog=TCboard.p&committee=SC&TC=TC+101](http://www.iec.ch/cgi-bin/procgi.pl/www/iecwww.p?wwwlang=E&wwwprog=TCboard.p&committee=SC&TC=TC+101)

IEC 61340-2-1 Electrostatics – Part 2-1: Measurement methods - Ability of materials and products to dissipate static electric charge

IEC TR 61340-2-2 Electrostatics – Part 2-2: Measurement methods – Measurement of chargeability

IEC 61340-2-3 Electrostatics – Part 2-3: Methods of test for determining the resistance and resistivity of solid planar materials used to avoid electrostatic charge accumulation

IEC 61340-3-1 Electrostatics – Part 3-1: Methods for simulation of electrostatic effects – Human body model (HBM) – Component testing

IEC 61340-3-2 Electrostatics – Part 3-2: Methods for simulation of electrostatic effects – Machine model (MM) – Component testing

IEC 61340-4-1 Electrostatics - Part 4: Standard test methods for specific applications Section 1: Electrostatic behaviour of floor coverings and installed floors

IEC 61340-4-3 Electrostatics – Part 4-3: Standard test methods for specific applications - Footwear

IEC 61340-5-1 TR2 Electrostatics - Part 5-1: Protection of electronic devices from electrostatic phenomena - General requirements

*(Note: published in Europe as a full standard under number EN 61340-5-1)*

IEC 61340-5-2 TR2 Electrostatics - Part 5-2: Protection of electronic devices from electrostatic phenomena - User guide

### **6.6.4 US Standards:**

EOS/ESD Association (7900 Turin Road, Bldg 3, Suite 2, Rome, NY 13440-2069, USA, Tel: +1 315 339 6937, Fax: +1 315 339 6793, email: [eesesd@aol.com](mailto:eesesd@aol.com), website: [www.eoesed.org](http://www.eoesed.org))

ESD STM 1.1 - 1998 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - Wrist Straps

ESD STM 2.1 - 1997 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - Garments

ANSI/EOS/ESD S3.1 - 1991 EOS/ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Ionisation

ESD DSP 3.3 - 1997 ESD Association standard practice for the Protection of Electrostatic Discharge Susceptible Items - Periodic Verification of Air Ionisers (Unapproved draft)

ESD STM 4.1 - 1997 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - Worksurfaces - Resistance Measurements

ESD STM 4.2 - 1998 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - ESD Protective Workksurfaces - Charge Dissipation Characteristics

ESD STM 5.1 - 1998 ESD Association standard test method for Electrostatic Discharge (ESD) Sensitivity Testing - Human Body Model (HBM) - Component Level

ANSI/ESD S5.2 - 1994 ESD Association standard for Electrostatic Discharge (ESD) Sensitivity Testing - Machine Model (MM) - Component Level

EOS/ESD DS 5.3 - 1993 ESD Association standard for Electrostatic Discharge (ESD) Sensitivity Testing - Charged Device Model (CDM) - Component Level (Unapproved draft)

ANSI/EOS/ESD S6.1 - 1991 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Grounding - Recommended Practice

ANSI/ ESD S7.1 - 1994 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Resistive Characterisation of Materials - Floor Materials

ANSI/EOS/ESD S8.1 - 1993 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Symbols - ESD Awareness

ESD S9.1 - 1995 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Footwear - Resistive Characterisation

ANSI/EOS/ESD S11.11 - 1993 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Surface Resistance Measurement of Static Dissipative Planar Materials

ESD DS11.12 - 1996 ESD Association standard for the Protection of Electrostatic Discharge Susceptible Items - Volume Resistance Measurement of Static Dissipative Planar Materials (Unapproved draft)

ESD S11.31 - 1994 ESD Association standard for the evaluating the Performance of Electrostatic Discharge Shielding Materials - Bags

ESD STM12.1 - 1997 ESD Association standard test method for the Protection of Electrostatic

## Discharge Susceptible Items - Seating - Resistive Measurement

ESD DS20.20 - 1998 ESD Association standard for the Development of an Electrostatic Discharge Control Program for - Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices) (Unapproved draft)

ESD DSTM54.1 - 1997 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - Floor Materials and Footwear - Resistance Measurement in Combination with a Person (Unapproved draft)

ESD DSTM54.2 - 1997 ESD Association standard test method for the Protection of Electrostatic Discharge Susceptible Items - Floor Materials and Footwear - Voltage Measurement on a Person (Unapproved draft)

'Requirements for handling electrostatic discharge devices' EIA 625 1994

National Fire Protection Association (1 Batterymarch Park, Quincy, Massachusetts 02269-9101  
Tel: +1 617 984 7249, Fax: +1 617 770 3500)

Available in Europe from ILI, Index House, Ascot, Berks. SL5 7EU Tel: +44 1344 636 300,  
Fax: +44 1344 291 194, email: standards@ili.co.uk, website: www.ili.co.uk

ANSI/NFPA 77 Static Electricity 1993 Edition

NFPA 99 Standard for Health Care Facilities 1996 Edition

### **6.6.5 Japanese Standards:**

Japanese Industrial Standard JIS L 1094 - 1988 Testing Methods for Electrostatic Propensity of Woven and Knitted Fabrics

### **6.7 Shell Safety Guide** 'Static Electricity - Technical and Safety Aspects' 1988

### **6.8 BOOKS:**

J. A. Cross '*Electrostatics: Principles, problems and applications*' Adam Hilger, Bristol

M. Glor '*Electrostatic hazards in powder handling*' Research Studies Press 1988

W. D. Greason '*Electrostatic discharge in electronics*' Research Studies Press 1992

H. Haas '*Electrostatic hazards: Their evaluation and control*' Verlag Chemie 1977

G. Lüttgens; M. Glor '*Understanding and controlling static electricity*' Expert Verlag 1989

G. Lüttgens; N. Wilson '*Electrostatic hazards*' Butterworth-Heinemann, 1997

D. M. Taylor and P. E. Secker: '*Industrial electrostatics: Fundamentals and measurements*'  
Research Studies Press, from John Wiley 1994

J. F. Hughes '*Electrostatic particle charging: Industrial and health care applications*'  
Research Studies Press, from John Wiley 1997